IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE US APPLICATION OF CORNES

SERIAL NO. 10/658,697 GROUP ART UNIT: 1616
FILED: September 9, 2003 EXAMINER: S M CLARDY
TITLE: HERBICIDAL COMPOSITION

DECLARATION PURSUANT TO
37 CFR 1.132

I, ULRICH JOHANNES HAAS, a citizen of Freiburg/Brsg, Germany declare that:

1. That I was awarded the degree of Dr.ing.agr. in Hohenheim, Germany by University of Hohenheim.

2. That I was employed by SYNGENTA CROP PROTECTION, AG., as a Research Biologist beginning in March 2001 and presently hold the position of Team Leader in the field of Weed Control Research;

3. That I have been engaged in research work in the field of Weed Control Research for SYNGENTA CROP PROTECTION AG since 2001;

4. That I am the author or co-author of at least 22 publications and a named inventor on at least 13 patents and patent applications.

5. I planned and carried out experiments designed to assess whether any synergy existed between the compound mesotrione (2-[2-nitro-4-(methylsulfonyl)benzoyl]-1,3-cyclohexane-dione) and the compound flumetsulam (*N*-(2,6-difluorophenyl)-5-methyl[1,2,4]triazolo[1,5-*a*] pyrimidine-2-sulfonamide) as mentioned in the present application (Syngenta Docket Number PPD50661US Cont.) The experiments were carried out according to the following procedures. Seeds of weed species, as listed in the results tables, were sown in a standard soil.

PRE: After sowing, the soil was watered according to the needs of the plants and within a day the individual herbicides or mixture of two herbicides in various proportions dissolved in

deionized water were sprayed at 200 l spray volume/ha and 2 replicates.

POST: After sowing, the soil was watered according to the needs of the plants and the plants grown up under greenhouse conditions. Post-emergence applications of a range of concentrations of either the individual herbicides or mixture of two herbicides in various proportions dissolved in deionized water (200 l spray volume/ha) were made at a 2 leaves stage of the plants and 2 replicates for each treatment.

As example Callisto SC480 was used for Mesotrione (MST) and Phyton WDG80 for Flumetsulam. According to agricultural practice an adjuvant (Agridex) was added at a 2l/ha rate for the solo herbicides and mixture at POST application timing. After application the plants grew up under greenhouse conditions. 34 days after application (PRE) and 28 days after application (POST) the percent reduction in plant growth, compared to an untreated control, was assessed.

Synergistic effects were obvious and additionally calculated by the Colby equation for a two way mixture (Colby et al., Weeds 15; 20-22, 1967): Predicted value = (A+B)-(AxB/100)
where A = % assessed damage of herbicide A at solo application
and B = % assessed damage of herbicide A at solo application
If the assessed percent reduction of the mixture was more than the calculated predicted value of the Colby equation, synergism of the mixture was assumed.

The results of the experiments are shown in the attached table.

Synergistic effects of Mesotrione (MST) tankmixed with Flumetsulam post-emergence.

POST-EMERGENCE treatments POST + 2l/ha Agridex			
Polygonum convolvulus			Colby
		Mean Activity	expected
MST	50 ga/ha	80	
	25 ga/ha	60	
	12.5 ga/ha	15	
Flumetsulam	50 ga/ha	0	
	25 ga/ha	0	
	12.5 ga/ha	0	
MST+Flumetsulam	50+50 ga/ha	89	80
	25+25 ga/ha	89	60
	25+50 ga/ha	90	60
	12.5+25 ga/ha	50	15
	12.5+12.5 ga/ha	25	15

Synergistic effects of Mesotrione (MST) tankmixed with Flumetsulam pre-emergence.

PRE-EMERGENCE treatments			
Xanthium strumarium			Colby
		Mean Activity	expected
MST	50 ga/ha	15	
	12.5 ga/ha	0	
Flumetsulam	50 ga/ha	62.5	
	12.5 ga/ha	10	
MST+Flumetsulam	50+50 ga/ha	80	68.1
	12.5+12.5 ga/ha	80	10

6. The compositions of the present invention exhibit good synergy well over and above what would be expected using the Colby equation.

PRE-emergent very low activities at low rate levels of both compounds sprayed solo lead to the presumption that also the combination fails at such low rates. Surprisingly the results of the trial showed a real outperforming activity and synergistic effects could be detected even without using mathematical help at the 12.5 ga/ha rate. At that rate the solo Mesotrione spray did not control for example *Xanthium strumarium* at all and Flumetsulam also showed only a 10 % activity. Very surprising was therefore the 80 % control rate of *Xanthium strumarium* when both compounds where applied together at such low rates.

Similar surprising was the high activity of the tankmix at EarlyPOST timing. as an example Mesotrione alone showed minor activity of 60 % at 25 ga/ha and 15 % at 12.5 ga/ha on *Polygonum convolvulus*, and Flumetsulam was not active at both rates. The tankmix however resulted in an 89 % activity of the 25 + 25 ga/ha mixture and a 50 % activity of the 12.5 + 25 ga/ha mixture could be assessed.

The synergistic effects exhibited by compositions of the present invention is clear and is surprising to one skilled in the art.

7. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the

United States Code and that such wilful false statements may jeopardise the validity of the application or any patent issuing thereon.

Signed _____

(Ulrich Johannes HAAS)

Dated this 16 day of September 2004